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UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Entomology
Washington, D.C.

Forest Entomology Brief 69.   March 10, 1932

THE LOCUST BORER AND ITS CONTROL

Character and Extent of Injury

The common locust borer (Cyllene robiniae Forst.) is a very destructive forest and shade-tree insect widely distributed throughout the United States. Injury is caused by the larval or grub stage of this insect. Injury consists of large burrows, made by the grubs, in the sapwood and heartwood of the trunk and larger branches of the tree. Even though the locust borer may not kill trees outright it often disfigures them and renders them unfit for ornamental purposes or for the production of posts, railroad ties, insular pins, etc. Trees may be so badly weakened by this insect that only a slight wind will cause them to break off at points of serious attack. Plantations so affected often have the appearance of a tangled mass of broken trees.

Evidence of Infestation

The presence of the young borers is easily detected in the early spring about the time the leaves begin to unfold. At this time characteristic brown or yellow pellets of excrement can be seen coming from "wet spots" (caused by the flow of sap) on the bark around the entrance to the larval galleries. Much of the injury is confined to the lower portions of the stem where the bark is rough. Other signs of infestation consist in the leaf buds failing to open or the foliage being dwarfed. Old attacks are readily recognized by calloused swellings of growth on the trunk, or by borer holes extending into the wood. Repeated attacks by the borer oftentimes kill the tree.

The Borer, Its Seasonal History and Habits

This insect in the adult stage is a comparatively large long-horned beetle about three-fourths of an inch in length. It is deep velvet-black in color, marked with bands of bright yellow, of which the third on the wing covers is W-shaped. The adult beetles occur in large numbers on goldenrod in the late summer or early fall. Shortly after emerging, the female adults deposit their eggs in the rough crevices of the bark of black or yellow locust. Egg laying takes place from the first part of September through the middle part of October. The eggs hatch in about one week. As soon as they are hatched, the young larvae, or grubs, bore their way through to the inner bark, where they pass the winter in a dormant state. Early in the spring, at about the time the buds begin to swell, they resume their activity and finally work into the woody portion of the tree. Up to this point in their life cycle there has been little damage to the tree. The damage increases from this point up to the time the larvae are full grown, because their work is now confined to the woody portion of the tree, often penetrating as deep as the pith. The larvae reach full development during the month of August, at which time they pupate, emerging as adults during the latter part of August or in early September. (The times given above for the different stages in the life cycle are only approximate. They will vary with different geographical locations, being earlier to the south and later to the north. The dates above apply to the Central States Region.)

Control Measures

For shade trees, small plantations, and groves, the infested trees should be sprayed in the spring at about the time the leaves begin to develop. The most effective spray to use is crude orthodichlorobenzene made up as follows: Make a stock solution of 1 gallon of orthodichlorobenzene, 1 gallon of soft water, and 1 pound of fish-oil soap or common laundry soap. (If the water is hard, add 1 teaspoonful of washing soda to 1 gallon to soften it.) The soap should be dissolved in boiling water and after removing it from the fire the other ingredients should be added. Then take one part stock solution and add six parts of soft water to make the spray solution. Care should be taken in handling the chemical to keep it from coming in contact with the body, as it will cause a slight burning of the skin. It is noninflammable.

Where only a few lightly infested trees are to be treated, it may be advantageous to paint the infested places on the trunk with an emulsion composed of crystalline paradichlorobenzene and pine-tar oil. It is made as follows: Add 1 pound of paradichlorobenzene to 1 quart of hot soluble pine-tar oil, then put in 1 quart of water, and thoroughly mix the ingredients together. Use one part stock solution to two parts water and apply with a paint brush.

The two above-mentioned measures should be used early in the spring and are of little value if used after the borer has entered the wood. Where infested trees are not discovered until the borer has entered the wood they should be treated in the following manner: Inject about 2 tablespoonfuls of carbon disulphid into the borer holes and plug up the opening with grafting wax.

The cost of the control methods mentioned above will usually be prohibitive for use on large areas of locust. In such cases indirect methods may bring about control of the locust borer. Recent investigations by this Bureau have indicated that the vigor of trees and locust borer damage are quite closely related. Therefore, anything that can be done to improve the vigor of the trees in a stand will tend to lessen the amount of locust borer damage. The cutting out of all badly scarred and weakeneed trees will cut down the number of adults which will emerge in a stand, because it is in this class of material that the locust borer is best able to develop through to the adult stage. Such sanitation cuttings should be carried on, preferably, during the winter or early spring. If carried on during this period of the year, it will not be necessary to destroy the trees cut because the borers that are in them at the time they are cut will not be able to develop. However, if the cutting is done in the summer, it will be necessary to destroy all the material which is cut in order to insure against emergence of the adults from these trees.

The practice of pruning young locust trees is discouraged because such practices usually lead to a heavy infestation of the borer. The reason for this is not entirely clear, unless the pruning may reduce the vigor of the trees or the cutting off of limbs may offer a large number of rough places where the female can deposit eggs. Heavy thinning is likewise discouraged because it appears that such practices are apt to result in a heavy infestation of the borer following thinning.

The above-mentioned chemicals used in control measures are manufactured by only a few firms. Names and addresses will be furnished on application to the Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C., or to the Bureau of Entomology Field Laboratory, Central States Forest Experiment Station, Columbus, Ohio.

Additional information concerning the control of the locust borer can be obtained by writing to either of the addresses given above.

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